Architectural CONCRETE

Nine-Story Apartment for Memphis

By H. M. Burnham*, A.I.A.

THERE was a saying current in the building management profession that anyone erecting a multi-story apartment in these times was simply "buying a tall pile of grief and woe". This cynicism was not without foundation. During a well-known boom some years back, tall apartment houses were built for the limousine trade: they were extravagantly designed, wildly financed, and gorgeously erected with the idea that high rentals would continue to prevail. When bitter times came and people found they could live without alabaster, the high rentals were either beaten down or the tenants moved to more modest abodes. Incomes waned but operation costs did not; weak financing collapsed and soon a lot of people were owning other peoples' empty buildings.

A group of Memphis men, however, believe that the big apartment has a place in the urban scheme, particularly since there is always a demand for decent dwellings at modest rentals. They reasoned that as many as 96 apartment units could be built in one building at more reasonable cost on a smaller piece of desirable, centrally located property than that many units spread out elsewhere. They argued that a building designed for middle class incomes could be reasonably expected to maintain a high occupancy at stable rentals during all periods. And they decided that a building soundly financed and economically built with the intention that operation costs be kept to a minimum at all times, was a sound investment and not a gamble on "all or nothing".

Kimbrough Towers, a nine-story, 96-unit all-concrete apartment building at the corner of Union Ave. and Kimbrough St. in Memphis, Tenn., is the result of this reasoning. Evidence of its soundness is the fact that more applications than apartments were in the office before the building was half way up.



Memphis' new Kimbrough Towers, viewed from the south.

The builders and holders of growing equities in this new apartment are the building operator, the contractor and the architect. Eight years ago they had the idea that each had something to offer: Mr. John F. Kimbrough, Jr., had a fine piece of land and a large rental business; the S. & W. Construction Co. had an organization of building craftsmen; and the architect had a vision of a design. It was with the aid of an FHA limited dividend loan that these unused values were finally pooled and put to work in 1939 with mutually gratifying results.

*Of Memphis, Tenn.



Citizens of Memphis look up at Kimbrough Towers as one of the finest buildings in the city. It is the first multi-story apartment building in architectural concrete to be erected east of the Rockies. Designed by Architect H. M. Burnham with H. B. Hulsey as associate, Gardner & Howe were structural engineers and S. & W. Construction Co., contractor—all of Memphis.

Use of architectural concrete was determined long before the plans were made. The contractor had previous experience with this material and considered a building of this size a splendid advertisement of his special abilities in this material. The architect recognized an opportunity to work in a new field of design, and the building operator had the real and psychological advantages of a new type of building in appearance, stability, firesafety and low cost of operation. No more fortunate combination of motives and objectives could be found for a building enterprise.

The building was designed for low cost of operation. Each of the eight floors of dwellings above the ground floor, which is occupied by stores and shops, is divided into two groups of six apartments which, except for the automatic elevators and stairs serving the two wings of the building, are self contained. There is a gas-fired, hot water heating system for each group of six units, two heaters to a floor. Thus, boiler capacity is never used for unoccupied space. Due to the compactness of the six-unit groups, corridor space is eliminated and trash removal is made easy by means of incinerators.

In plan the building comprises two parallel wings joined by a central portion. Expansion joints located between the wings and the connecting unit divide the building into three independent structures although the six-unit apartment groups comprise a wing and part of the connection. All living quarters have two outside exposures, being either in corners or in parts of the building opening on opposite sides.

Foundation conditions were favorable and as a consequence maximum depth of footings was kept to 7 ft. The concrete walls are 11½ in. thick at first and second stories, and 9½ in. thick up to the roof line. Floors throughout and the roof are 4½-in. solid slabs, the roof being insulated.

Forming material for the exterior wall surfaces was Presdwood so utilized that lifts of concrete would not exceed 5 ft. From foundation to the top, construction joints are concealed in horizontal rustications conforming to the levels of window sills and heads. In keeping with the simplicity

of the plan, the only enrichment used in the exterior design was confined to easily formed motifs at entranceways, pylons on main facades, and bands at coping levels. These details were cast against milled wood forms built into the wall panel forms. All the forms were detailed and breaks were made to conform to dimensions of forming material. Considerable saving in material resulted.

Exterior walls have a smooth finish of uniformly light color. All walls and partitions were plastered, the outside walls being furred with metal studs and rock lath.

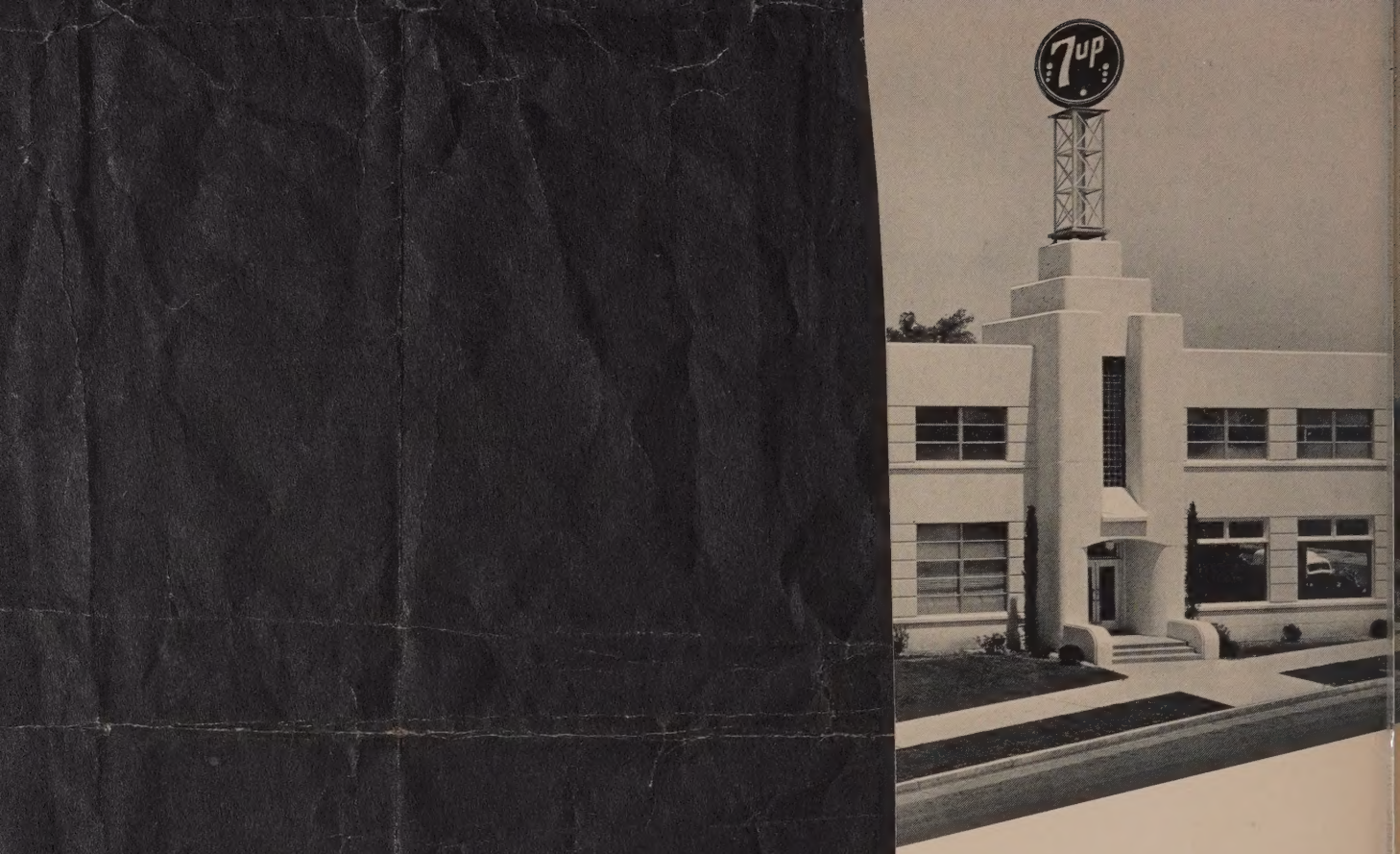
The construction of a building of this size and height in Memphis was novelty enough in these times, but the method of building in concrete—erecting forms and raising them for each succeeding lift—caught the fancy of the citizens and more than the usual faithful gallery of "street-side engineers" watched its daily progress upward. Naturally, both the contractor and the architect had more than usual interest in this building, and no effort was spared to assure that this structure was as nearly perfect a job of architectural concrete as modern technique could make it.



The building comprises two nine-story tower sections joined by a connecting unit. All apartments have two-way exposure.

Expectations have been more than satisfied. The building has been accepted by the citizens of Memphis as a fine addition to a most beautiful district of the city. It stands on the crest of a small hill where all can see it, looking bold, modern and prosperous. There is no doubt of its desirability as a home for 96 families of the type for which it was designed. It is, therefore, a safe investment.

Assisting in the preparation of plans were H. B. Hulsey, associate architect, and Gardner & Howe, structural engineers. Total cost of the building which contains 1,010,424 cu.ft., was $433,000 which probably makes it one of the most economically constructed multi-story, high type apartment buildings ever erected.



Plant for in California

By F. W. DeFoy*, Architect

A NEW 7-Up bottling plant built in Bakersfield, Calif., and owned by D. K. Washburn, is one of the most modern plants of its size in the country. The owner, who worked out preliminary floor plans, is well qualified to judge the requirements of this type of business since this is the third bottling works of his own that he has built and operated in this region.

The plan is aimed at streamlining production in all phases of operation. Power conveyors and other labor saving devices feed and take away from the bottling machinery and load and unload trucks with a minimum of handling. Capacity of the plant takes care of current distribution needs in Bakersfield and Kern County to a maximum of 168,000 bottles per day. With additional machinery, the building has facilities for about twice this capacity when required.

For permanence of construction, adaptability to design, proper sanitary conditions and low insurance rates, the building was naturally planned and built in architectural concrete. It is of most modern design, employing plain walls and large window areas to achieve clean, brilliant exterior appearance. For advertising purposes, the bottling room is open to the public at all times, and this room and the lobby have been made most attractive.

About 15,930 sq.ft. of floor space is provided in the entire

*Of Los Angeles, Calif.

layout. The garage across the rear of the lot and the warehouse along the east side contain a total of 11,197 sq.ft. The two-story section contains 4,733 sq.ft. This amount of space provides ample storage for raw materials as well as plant operation, sales, advertising and administration offices. A basement under the main portion of the building houses boilers, air-conditioning equipment and other installations.

All exterior walls are of reinforced concrete. The second floor was originally designed for wood joist and flooring to be carried on steel beams. After the walls were up and the steel beams installed, the owner decided to change the second floor to concrete with suspended metal lath and plaster ceiling, an arrangement which provided a convenient space to conceal all vents, rough plumbing, air and other ducts.

The bottling room floor over the basement was designed for a live load of 450 p.s.f., a necessity since one of the machines weighs 66,500 lb. in operation.

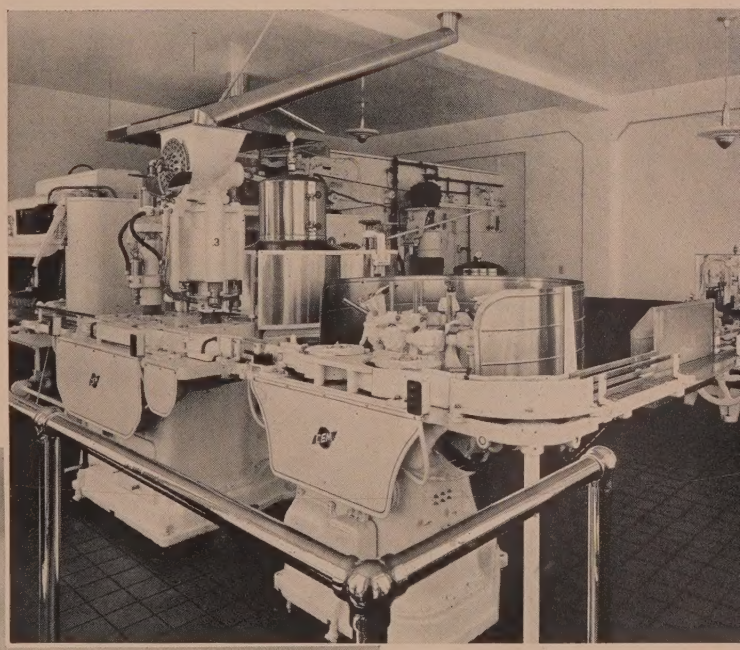
Exterior walls are 8 in. thick and are reinforced with a double curtain of reinforcing steel. Concrete of a 1:2½:3¼ mix was provided by transit mix trucks. With the exception of the concrete in the tower, the concrete in the walls cost $25 a cu.yd. including forms and reinforcement. Complexity of the tower forming added about $10 a cu.yd. to the cost of the tower concrete in place. In spite of the fact that the arrangement of the building required 990 lin.ft. of exterior wall as compared with 505 lin.ft. if a square plan had been possible, the cube foot cost was only 15.9 cents.

Concrete for all interior and exterior exposed surfaces, such as the inside of the garage, warehouse and the entire exterior, was placed against ⅝-in. plywood. After forms were stripped the surfaces were cleaned down and finished with two coats of portland cement paint. All exposed metal work received one prime coat and two coats of aluminum paint. Lobby and office walls are finished with 7-ft. knotty pine wainscot and Celotex. The ceilings are acoustically treated. The knotty pine is painted and glazed and the Celotex is tinted. Wall surfaces in the syrup and bottling rooms are enameled while all other exposed surfaces were given three coats of flat paint.

Due to the fine cooperation of F. A. Greenough, general contractor of Bakersfield, and his superintendent, M. A. Dulger, excellent results were obtained in the construction. Concrete was supplied promptly by the transit mix department of the Kern Rock Co., enabling all stages of the work to progress rapidly and efficiently.

Since completion the building has received much favorable comment from all sources.

The building is clean and white inside and out—a splendid advertisement of the sanitary conditions under which the product is bottled.





Architect F. W. DeFoy, Los Angeles, designed the building, following a floor layout made by the owner, D. K. Washburn. F. A. Greenough, of Bakersfield, was the contractor.

Functional Designs in Concrete

By John Duncan Forsyth*, A.I.A.

ON Sunday, March 31, 1940, the city of Bartlesville, Okla., dedicated a new public school plant which, in size, facilities and design, is one of the most modern schools in the Southwest. The layout comprises two main buildings —a combination high school and junior college structure which includes an auditorium, and a manual training building including a gymnasium.

In the design of these structures the exterior appearance was determined by the relative importance and grouping of the various units which together form the mass composition of the plan. In a strict sense, form follows function with practically no adornment.

In the high school building, the high center mass penetrated by the deep recessed main entrance portico dominates the design composition of the building, the height being controlled by necessarily higher ceilings of the library stack room and cafeteria, both of which are housed on the second floor. Administration offices and home economics department were placed on the first floor within this center area below the larger rooms. The position of the central or main staircase is self-evident as being located in the tower which extends through the roof.

Natural fall in grade to the south, together with the necessity of close proximity to the main entrance of the building, resulted in placing the auditorium, with its unusually high ceiling, to the extreme right of the composition. The sloping grade was utilized for the necessary slope of the auditorium floor, dressing rooms being placed on either side of the stage to act as buttresses or bases offsetting the apparent height of the stage and loft.

Evidence that the wing to the extreme left of the building houses rooms of lesser size and of similar function and purpose, is apparent by the unusual number of windows and the uniformity of their spacing as required for proper illumination of recitation rooms. The two floors of such rooms bring the height of this wing approximately up to the height of the auditorium. The upper floor area at the extreme left is taken up by the science lecture room which requires no outside illumination. The curved windows under the blank wall, which bears the name of the building in raised letters, provide light behind the banked seating of the choral room on the first floor.

Similarly in the manual training building, the gymnasium with its high ceiling and the height required for roof trusses, forms the dominating mass. Other work areas requiring but one story in height are grouped around the high center mass.

Exterior walls are architectural concrete placed against plywood forms on the outside and against rigid insulation board forms on the interior face. Exterior surfaces were left as they came from the forms without rubbing or refinishing of texture. The insulation board remains in place perma-

*Of Tulsa, Okla.

Classroom building, one of two large structures comprising the new Bartlesville, Okla., high school and junior college. Called the "most modern Forsyth, Tulsa architect who gave full play to his idea that form should follow function. Charles M. Dunning of Oklahoma City was general cont



nently as a base for plaster except in the upper portion of the gymnasium which was unplastered and acts as a sound absorbent element.

The exterior walls of both buildings are painted with an oil base paint in a soft coral color. Exterior metal work, including all windows and doors, is painted a subdued Indian red. Interior walls are of sand finished plaster with woodwork in natural flat varnish.

Concrete floors in the high school building, including the corridors, are finished with asphalt tile; the stairs are terrazzo. In the manual training building, floor finish in foyer, classrooms and corridors is asphalt tile with maple flooring for the gymnasium. Terrazzo is used in locker rooms and showers.

Banked seating in the gymnasium is of reinforced concrete with wood bleacher seats.

Both buildings are heated by a gas-fired central steam plant located in the basement of the high school building. Heating is controlled throughout by a pneumatic temperature control system.

Classroom and laboratory fix-

e Southwest", it was designed by John Duncan



tures and facilities are of the most modern design and manufacture. Artificial illumination is designed for maximum comfort and utility. A public address system and a single-channel radio pickup are features of the school which serve the entire plant.

Completion and occupation of the new school plant early in the year took great pressure off the previously existing facilities. One building which formerly housed 1,700 students of junior high, senior high and junior college grades, is now devoted solely to junior high school work, while the new buildings care for all senior high school and junior

college activities. This expansion also permits the broadening of college and high school curricula, making it also possible to add new members to the faculties of all schools. The manual training building with its modern equipment brings vocational education to Bartlesville on a comprehensive scale with opportunities for practical training in a large variety of trades.

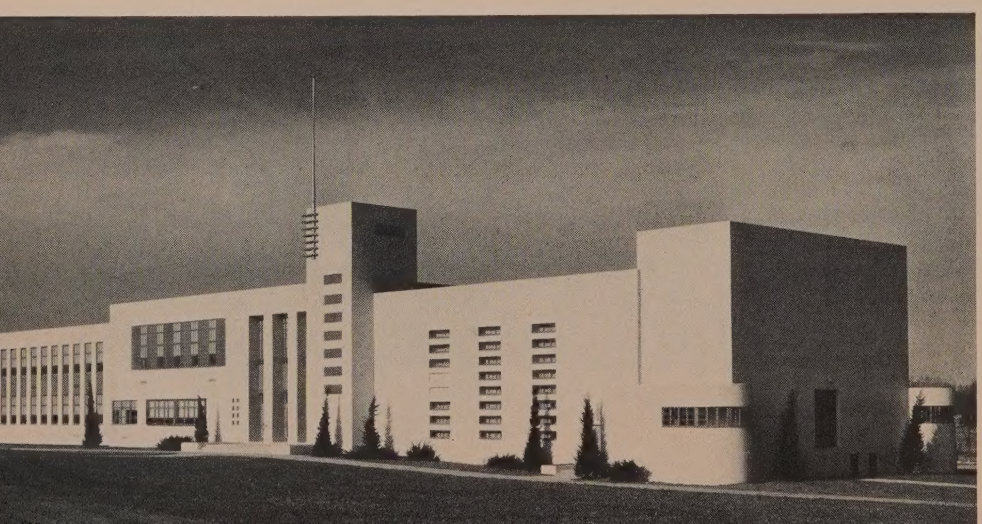
Construction of the new buildings together with additions to two other older school structures comprises a building program costing about $500,000. In addition to funds created by bond issue and PWA loan and grant, a sum of $55,000 was given to the building fund by the Frank Phillips Foundation of Bartlesville.

The architect was greatly aided throughout the planning of the new structures by the cooperation of the board of education and the helpful suggestions of faculty officers. Construction work, carefully supervised by the architect's superintendent, was carried on rapidly and efficiently by the general contractor, Charles M. Dunning of Oklahoma City. The care which must go into erection of forms and placing concrete to produce fine textures and details is evident in the photographs.

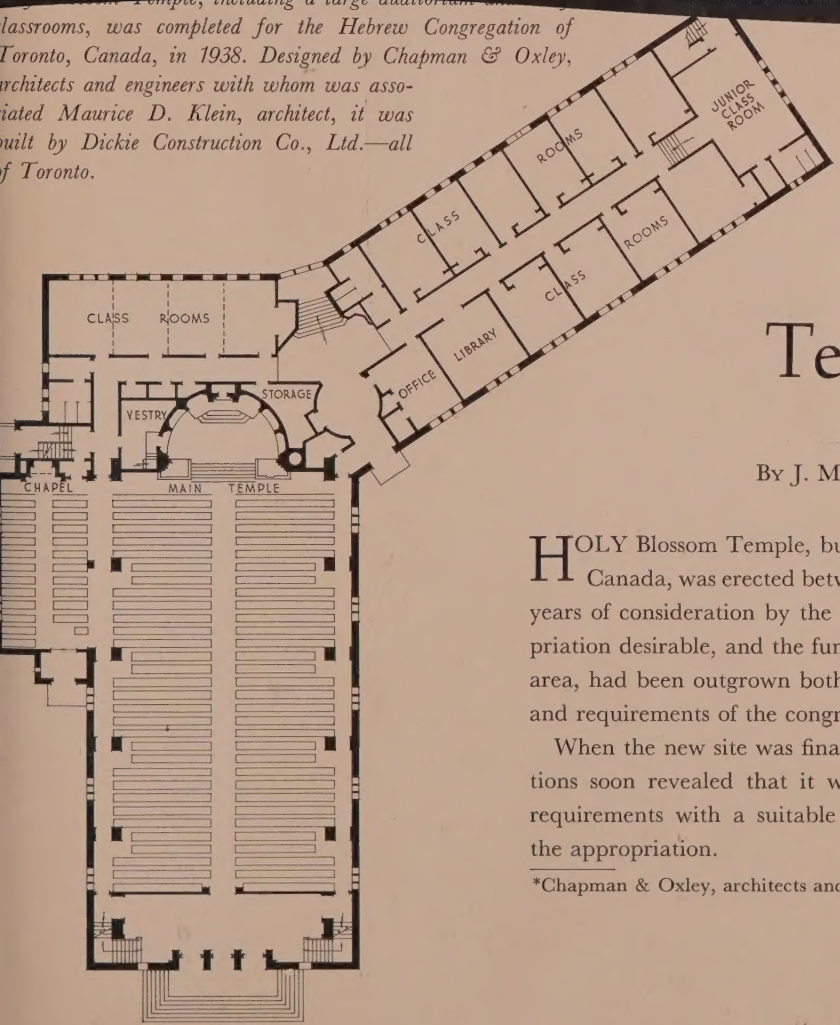
On dedication day visitors from many parts of Oklahoma attended the ceremonies, and the consensus of educators throughout the state was that Bartlesville now has one of the best school plants in the Southwest. What impressed them was the beauty of the finish both inside and out and the fact that the plan, building and equipment were all designed for long and enduring use.

Plywood was used to form the curved walls at entrance to manual training building.

(Below) Another view of the classroom building which includes an auditorium at the extreme right.



lassrooms, was completed for the Hebrew Congregation of Toronto, Canada, in 1938. Designed by Chapman & Oxley, rchitects and engineers with whom was asso-iated Maurice D. Klein, architect, it was uilt by Dickie Construction Co., Ltd.—all f Toronto.



Holy Blossom Temple—Toronto

By J. Morrow Oxley*, M.E.I.C.

HOLY Blossom Temple, built for the Hebrew Congregation of Toronto, Canada, was erected between August, 1937 and May, 1938 after several years of consideration by the congregation as to site, size, facilities, appropriation desirable, and the funds available. The old temple, in a downtown area, had been outgrown both in location and capacity to meet the desires and requirements of the congregation.

When the new site was finally chosen and acquired, studies of the conditions soon revealed that it would be somewhat difficult to fulfill all the requirements with a suitable architectural treatment within the limits of the appropriation.

*Chapman & Oxley, architects and engineers, Toronto, Canada.

precast detail symbolizing various phases of the Hebrew ritual.

The site is a commanding one, visible from some distance in most directions; and it was felt imperative that the building should be monumental in effect. Consideration was given to designs in stone, brick with stone trim, and architectural concrete. It soon became evident that the only way to achieve the desired result in regard to size, facilities, architectural effect and cost, was by the use of reinforced concrete. Any comparable result in traditional materials was estimated to cost about $50,000 more than concrete.

The architectural style adopted is Byzantine in general character, chosen for its expression of Eastern influence. The details symbolize Hebrew tradition and ritual whenever they are suitable.

Expression of the Hebrew ritual, however, was not only in decorative details but in the formal solution of the Temple's lines and forms. This symbolism was based on the Sacred Numbers, and created interesting problems in design. For example, the seven steps of the main entrance represent the days of the creation as do the seven windows above the doors. The two lions are the Lions of Judah and the 12 circles of the rose window symbolize the original Tribes of Israel. The Shield of David is the familiar six-pointed star which comprises the central motif of the rose window.

The Temple is divided into five bays symbolizing the five



Plaster waste molds were used for the cast-in-place detail of the arch reveal and window.

cast in place except for a few of the ornamental details, the chief of which is the great arched window over the main entrance. The molded frame of this window, including the member enriched with rosettes, was cast in place but all of the tracery inside of this was precast concrete, jointed and anchored with bronze dowels.

Plaster waste molds were used generally throughout the building for integral ornamentation where it was impractical or uneconomical to use milled wood forms. Principal areas of plaster mold detail are the splayed band forming jambs and the semicircular head surrounding the main tracery window over the front entrance; the ornament on the gable including the molded dentils of the coping and

detail over the grille windows; dentil courses at main eaves and chancel eaves, and ornamental molded headings over the main entrance doors. Milled wood molds were used for window grilles, sunken panels, and reveal work on the tower, main gable and chapel entrance.

The entire job was treated in principle the same as masonry work, employing the joint lines of the form boards as coursing heights. This, therefore, governed the exact heights of the lifts of concrete since horizontal stoppage planes were always located on the lines of the form board joints. Wherever possible concreting was stopped at sills and heads of windows and doors, with intermediate construction joints depending upon the heights of openings. Lifts of concrete generally averaged 5 to 8 ft., in a few instances being greater or less to suit special circumstances.

Window grilles flanking the main entrance were formed by fitting wood inserts into the forms. Forming material was flat grain T&G lumber. No effort was made to erase form lines, and no paint was applied to the exterior.



Form boards for exposed exterior surfaces were 7/8x5¾-in. T&G flat grain No. 1 British Columbia fir. For unexposed interior form faces, Ontario spruce was used.

After forms were stripped the walls were permitted to cure thoroughly before the holes left by pulling the form ties were grouted. Final surface finish was not a cement paint treatment, but a natural concrete color obtained by scrubbing the walls with a very weak solution of muriatic acid and finally washing them thoroughly with water. Since a rather light colored concrete was obtained by the addition of small quantities of limestone dust to the mix, the general color effect is satisfactory. However, certain areas of the walls are darker, probably due to a variation in the absorption of the forming materials used.

In the opinion of the architects, concrete as a medium of architectural design has many important advantages and some limitations that must be recognized in using the material to achieve its full values in texture and color. Architectural concrete is a sincere expression of the construction of Holy Blossom Temple, a structure of large masses in which the integral nature of the material is an interesting and important element of the design. The refinement of concrete as an architectural material continues, and as its use increases, special types of design should gradually develop that will express the unique character of the material while avoiding some of the errors that have been encountered from time to time.

The Temple was built at a contract cost of $192,500, which included all expenses outside of furnishings.

The architects were Chapman & Oxley of Toronto, with whom was associated Maurice D. Klein of Toronto. General contractor was Dickie Construction Co., Ltd. of Toronto.

Entrance to the classroom portion is at the left of the auditorium.





Building Program Solves School Problems

By Thomas W. Williamson*

Main entrance to Lincoln School, one of two new concrete structures in Independence, Kan., which combine five old school districts. Thomas W. Williamson & Co., of Topeka were architects for both buildings. Ellis & Vollmer of Wichita were contractors for the Lincoln School.

Washington School, second building in Indepe[illegible]n Every & Vance of Parsons were contractors.



OBSOLESCENCE of five old school buildings and mounting unit cost of education due to reduced attendance in elementary schools, were two serious problems solved at one time by construction of new Lincoln and Washington schools in Independence, Kan. The results of merging five school districts into two are the complete modernization of the city's school system, and operation of the schools at a lower tax rate than before.

The program was undertaken in 1938 when the board of education recognized that the lowering national birth rate, which has resulted in 2,000,000 less grade school pupils in the United States than 10 years ago, was being reflected in Independence elementary schools. A survey indicated that partially filled classes in five scattered districts could be combined at a great saving in educational effort and

*Thomas W. Williamson & Co., architects, Topeka, Kan.

expense, and at the same time it was considered that marked savings in operation could be effected by centralizing all elementary classes in two new modern buildings and abandoning completely the five old structures with their costly maintenance. Such a program appealed to the citizens of Independence because it presented an opportunity to revamp the educational system along modern lines.

Grants from PWA and funds from local bond issues provided the financing, and the program got under way late in 1938.



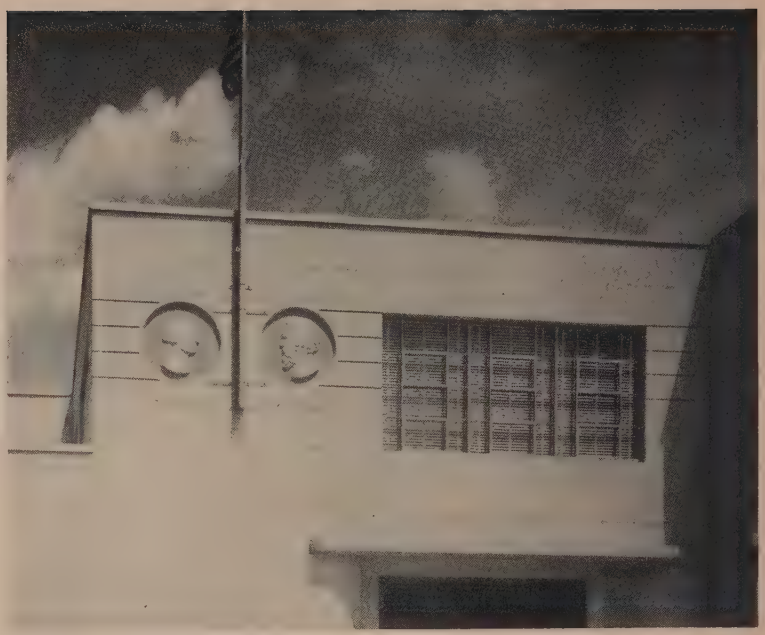
Rear view of Lincoln School. Vertical and horizontal rustications in the walls conceal construction joints.

lidation program, has most up-to-date equipment to match its modern concrete exterior. Finney & Hazard of Topeka were engineers and



The new schools were not only planned in accordance with current educational standards, but they were built of the most modern material—architectural concrete. Choice of this material was made after thorough investigation by board members convinced them that concrete would produce the beauty and structural permanence desired. A visit to new concrete schools in neighboring states produced evidence that concrete buildings can be operated at minimum maintenance expense.

Designing the schools in concrete provided interesting studies, for the material lends itself to lines, shapes and shadows that have been sought often by architects but have been so difficult to obtain in prefabricated masonry materials. The continuity of surfaces and the minimum requirement for jointing gave free play in the creation of suitable forms to enclose useful space.



Sculptured heads of Washington and Longfellow were cast against plaster waste molds on Washington School.

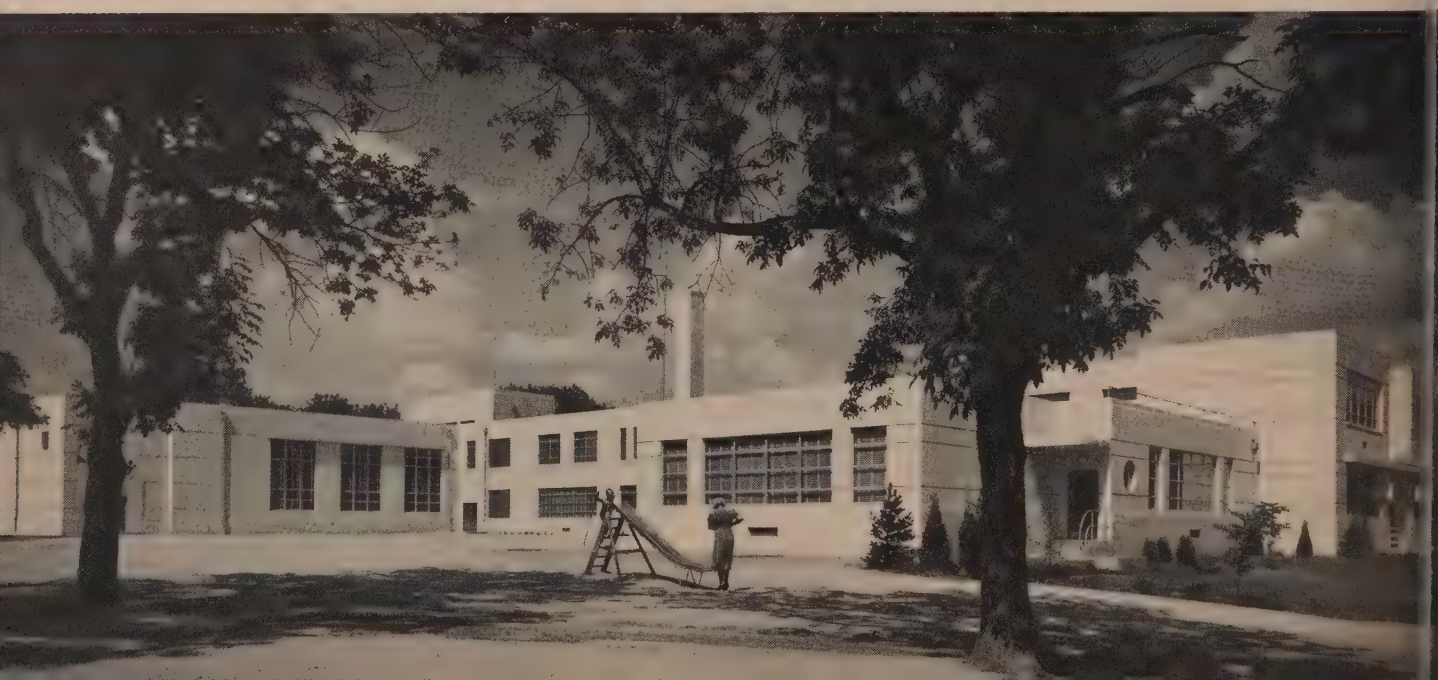
The engineering of the buildings in concrete also presented problems new to this section of the country. The variation in temperature during the year of approximately 110 deg. F. causes expansion and contraction for which provision had to be made. We sought a solution to this problem by making a series of expansion joints extending through the buildings from bottom of footings to the top of the roof, each joint made watertight by a system of copper dams. Four of these expansion joints in each building divide them into five sections, each section practically a building in itself but so skilfully executed that the buildings appear as single units.

Excellent surfaces were obtained by careful placing of the concrete with the aid of electric vibrators and the use of plywood forms for all exterior wall faces. A color scheme of delicately tinted green walls contrasted with darker green entrance details and aluminum finish for window frames, clocks, flagpoles and inscriptions, strikingly sets off the modern lines of the buildings.

Both schools are equipped with the latest types of school furniture, radio, public address and alarm systems. Total cost, including all equipment, grading, sidewalks and landscaping, was slightly less than 31 cents per cu.ft.

Finney & Hazard, Topeka engineers, prepared structural designs for both school buildings. General contractors on the Lincoln school were Ellis & Vollmer of Wichita and for the Washington school, Every & Vance of Parsons, Kan.

Viewed from the playground, Lincoln School reveals the same finesse in design and construction as do the main facades.





Simply designed, this sturdy building [illegible] architect of Livingston, it was built by Yarbrough Construction Co., of Austin. Walter P. Moore of Houston was structural engineer.

Polk County Jail—Texas

By Emory S. White*, Architect

POLK County Jail, completed in April, 1939 at Livingston, Texas, is a three-story structure with accommodations for 53 inmates and a five-room apartment for the jailer on the first floor. The building was erected after efforts of the local court to finance it first by warrants and then by bond issue were finally realized by an outright grant of 45 per cent by PWA. Cost of the building alone was about $31,000. Jail steel and equipment added another $31,000.

Two primary requirements determined the use of concrete, foremost of which was the need for solid, impenetrable walls into which the jail steel could be anchored during construction. The other was that architectural concrete could produce the desired appearance of dignity and stability within the cost allowed for construction.

*Of Livingston, Texas.

Wall concrete was cast in lifts of 4 to 7 ft. using ¾-in. plywood in form panels 4x8 ft. in size. Thickness of walls is 12 in. Second and third floors and roof are 7-in. structural slabs having clear spans of 19 ft. 3 in. in one direction and 16 ft. 3 in. in the other. The main portion of the jail is supported on two columns. All exterior detail was cast in white pine forms.

After forms were removed the entire surface was rubbed with carborundum stone, following which a solution of zinc sulphate (1½ lb. per gal. of water) was applied to neutralize the alkalinity of the surface preparatory to applying three coats of cream colored oil base paint.

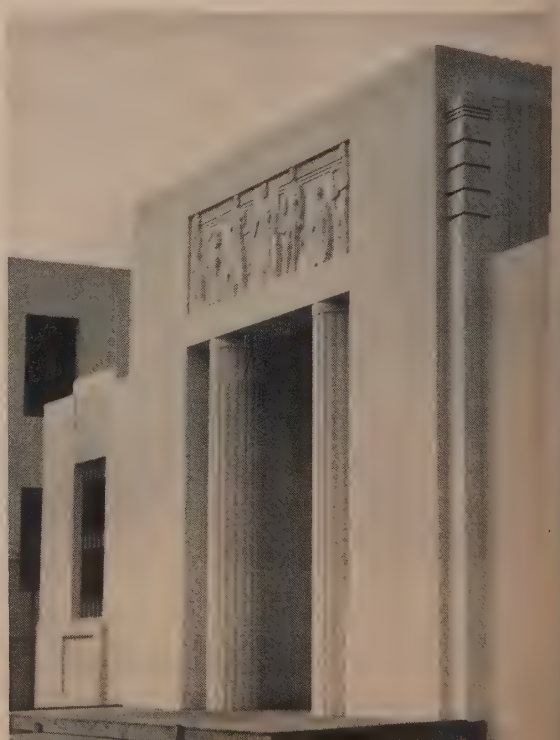
All work was done during a period of 7½ months by Yarbrough Construction Co., of Austin, Texas. Walter P. Moore of Houston was structural engineer.

Marion County Jail at Columbia, Miss., a recently completed architectural concrete building, improves the site of the old jail which it occupies. Designed by J. Howard Ryan, architect of McComb, Miss., it was built by WPA labor at a cost of $41,500.

Entrance to Georgia State Prison, Reidsville, Ga., shows interesting waste mold formed detail. Designed by Tucker & Howell, architects, and Robert Fiske, structural engineer—all of Atlanta, and built by Struck Construction Co., Louisville, Ky.

Guadalupe County Jail, at Seguin, Texas, built a few years ago, was designed by Wirtz & Calhoun, architects of Houston, and A. W. Harris, consulting architect Austin; J. W. Beretta Engineers, Inc., San Antonio, did the structural design, and Albert Nolte of Seguin was contractor.







Both the City and County of San Francisco use this modern concrete jail. Roller and Riedy, associated architects; H. J. Brunnier, engineer; and McDonald & Kahn, contractors—all of San Francisco.



Monterey County Jail, Salinas, Calif., was designed by Will G. Corlett, architect of Oakland and was built by Wm. C. Keating, contractor of Salinas.



Smith County Jail at Raleigh, Miss., is another modern design by N. W. Overstreet & A. H. Town, architects, Jackson, Miss. Currie & Corley of Raleigh were contractors.



Krouse & Brasfield of Meridian, Miss., were architects for Jasper County Jail at Bay Springs, Miss. Currie & Corley, Raleigh contractors, were builders.

A broad courtway separates St. Bernard Parish Jail from the courthouse at Chalmette, La. Weiss, Dreyfous & Seiferth of New Orleans were architects and R. P. Farnsworth & Co., Inc., also of New Orleans, was the contractor.

Gleaming white and modern of line is the new city jail at Weston, W. Va. Edward J. Wood & Son, Associates, of Clarksburg were the architects, and John L. Earnest & Sons, Wheeling, the builders.





Jail for Warren County, Kentucky

By J. M. Ingram*, Architect

ECONOMY in first cost of construction combined with durability and good appearance were uppermost in the minds of officials of Warren County, Ky., when they decided to build a new jail. Result is the new jail in Bowling Green, dedicated in December, 1939—an architectural concrete building replacing a masonry structure of 19th century vintage.

Sale of the old building financed the county's portion of the cost of the new structure which was shared equally by WPA. Total cost, including $22,263 spent for jail fixtures, was $85,787.

Concrete proved to be the logical material of construction from the standpoint of both design and economy. It permitted a modern exterior of light color in simply molded but quite appropriate detail. The strength of 12-in. thick concrete walls (18 in. thick at pilasters) provides an enclosure that is practically escape-proof.

The new jail is erected on a plan 44x56 ft. and is four stories high. Provision is made for an additional story when necessary. A concrete masonry building annexed to the jail houses the jailer and his family, this building being finished with stucco to harmonize with the larger building.

Floor and roof slabs throughout are 4 in. thick supported by beams and cast integrally with the walls. Interior partitions on first, second and fourth floors are of 6-in. reinforced concrete while third floor and basement partitions are concrete masonry. Foundations were carried down to solid rock.

The basement provides space for fuel room, storage, laundry, kitchen and headquarters for county enforcement officers. Floors above are equipped with cells accommodating a total of 180 prisoners, with special quarters on the third floor for women, juvenile detention and hospitalization.

Attention to detailing of the form panels of plywood made it possible to accommodate construction joints to architectural features of the exterior. Forming of concrete walls was so well done that the interior surface needed no additional finish treatment for cell areas, thereby effecting an appreciable economy, and the walls and floors of concrete assured a structure easy to keep clean and sanitary.

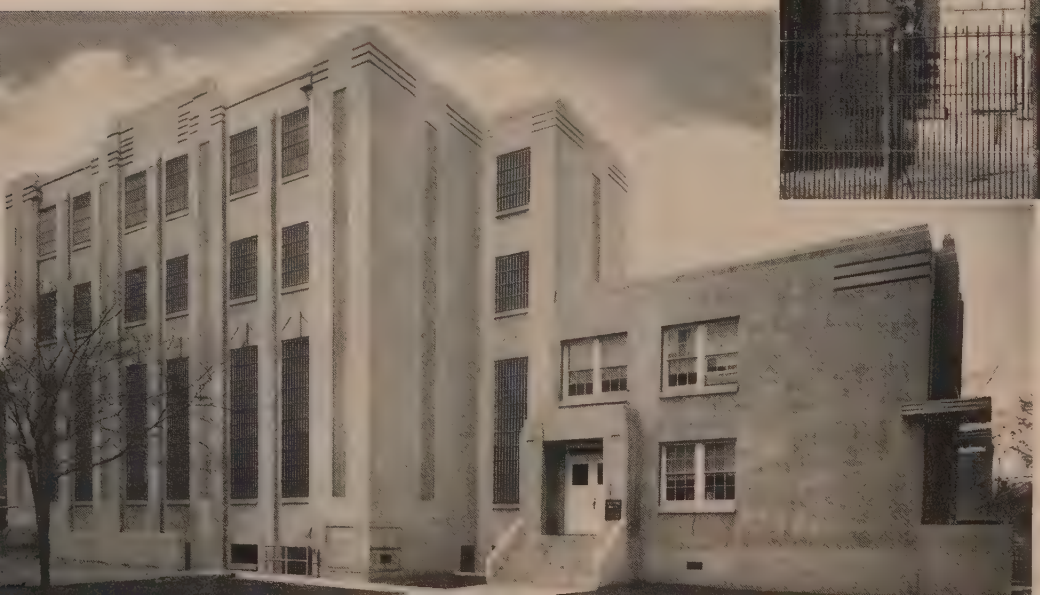
Limestone coarse aggregate was produced locally using WPA labor, and approximately 35 per cent of stone sand was used in place of natural sand because a saving could be made by so doing as natural sand had to be shipped in from some distance.

Specifications called for the exterior walls to be rubbed. After rubbing, the surface was cleaned with burlap to remove material worked up by the rubbing process and was left exposed without painting. The result is highly satisfactory to local officials and has drawn favorable comment from the public which generally pays little attention to such things.

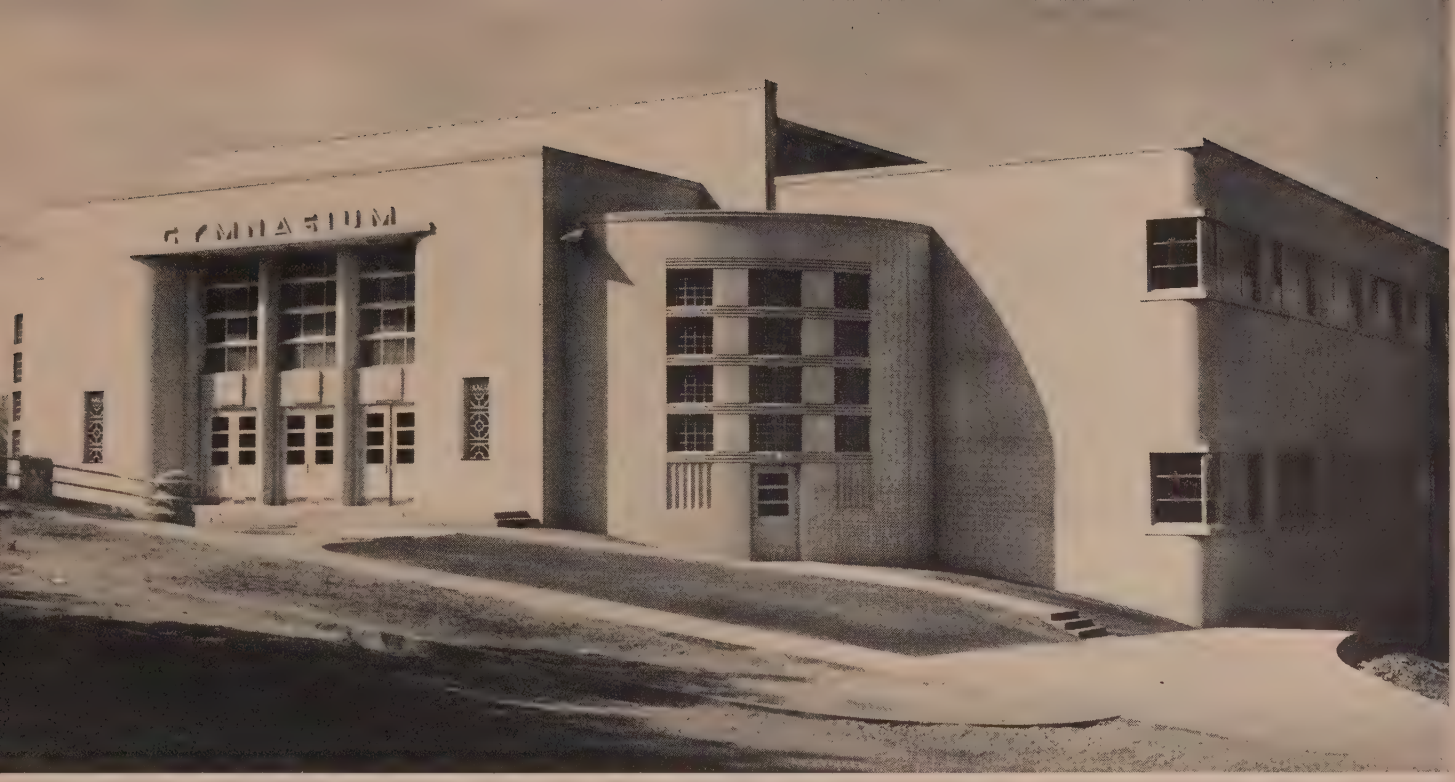
Prime movers in behalf of the new jail are present County Judge G. D. Milliken, Jr., and William H. Natcher, county attorney. Construction was carried out under supervision of James S. Hill, Jr., area engineer for WPA, and Clarence W. Jones, project superintendent.

*Of Bowling Green, Ky.





A new, three-story jail of architectural concrete replaces an old masonry prison (above) for Warren County at Bowling Green, Ky. Designed by J. M. Ingram, architect, Bowling Green, it was built by WPA.



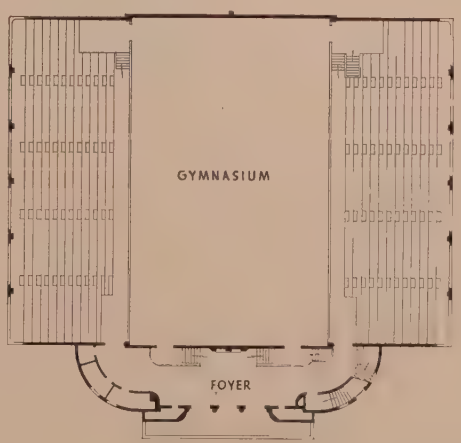
This modern gymnasium at The Dalles, Ore., is one of two widely separated concrete structures designed by John W. Maloney, architect of Yakima, Wash. The other is a hospital in Alaska. The gymnasium was built at a cost of $104,000 by Ekrem Construction Co. of Seattle. W. H. Witt Co., also of Seattle, prepared the structural design.

Designs in Concrete—Oregon to Alaska

By John W. Maloney*, A.I.A.

A HIGH school gymnasium at The Dalles, Ore., built on a hillside overlooking the Columbia River entering its great gorge through the Cascades, and a hospital set on the level terrain of distant Anchorage, Alaska, both of which the writer designed recently, have little in common other than their use of concrete for structural frames and walls. Of most diverse occupancy and type, the versatile material of their construction adapted equally well to both of them, and very satisfactory results were obtained although surroundings and conditions are wholly dissimilar.

The Dalles gymnasium is a large, well equipped structure providing facilities for the physical training and athletic needs of the local high school. The city is situated on the south bank of the Columbia in a setting of unusual beauty. The hillside site, at considerable elevation above the business district, presented more than average difficulties on account of steep slopes. An architectural design of contemporary style was wanted and as so frequently happens in the Northwest, it was necessary to hold costs to the lowest reasonable figure. For these reasons concrete was selected and used for both exterior and interior surfaces.



A highly satisfactory exterior was obtained with plywood forms which were used for both plane and curved surfaces alike. Control joints were provided in the design and have worked effectively. The walls are 8 in. thick and are used without furring. For sound control in the interior, ¾-in. insulation board was used in the ceilings, the sheets being placed in the forms and the concrete of the slab above placed directly on them.

The structural design was prepared

*Of Yakima, Wash.



Stairway in curved portion of front wall of gymnasium shows concrete exposed and painted for interior finish.

by W. H. Witt Co. of Seattle. The Ekrem Construction Co. of Seattle was the contractor. Cost was $104,000 and the project was made possible by means of a PWA grant. Both the owner and the writer are well pleased with the results obtained.

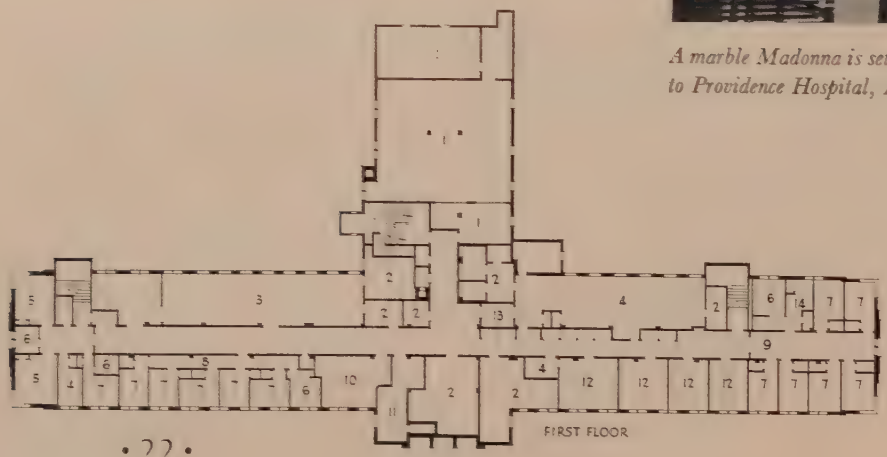
Those familiar with Alaska geography know that the Alaska peninsula and the Aleutian Islands separate Bering Sea from the Pacific Ocean. To the east and north of the peninsula a wide arm of the Pacific called Cooks Inlet penetrates nearly 200 miles inland. At the extreme northerly end of this inlet, nearly 2,000 miles from Seattle and continental United States, is the busy little city of Anchorage.

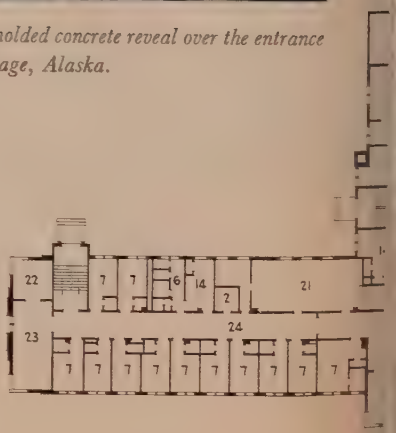
Not far from here is the well known Matanuska Settlement. There are several coal mines nearby and the United States Army is now starting to build a large air base at Anchorage. It is, therefore, not only well established but possessed of definite future prospects.

For this reason the Sisters of Charity, House of Providence of the Catholic Church, in constructing their new hospital, decided to make it of the highest standard both in equipment and construction. The result is the 120-room



A marble Madonna is set in a molded concrete reveal over the entrance to Providence Hospital, Anchorage, Alaska.







General view of Providence Hospital, a three-story structure with modern equipment. It serves a large area surrounding Anchorage, Alaska. The W. H. Witt Co. prepared structural designs and MacDonald Construction Co., of St. Louis, was the contractor.

modern, completely appointed Providence Hospital serving the entire southwestern region of Alaska.

That a hospital should be as thoroughly fire-resistant as possible is, of course, most desirable. Naturally concrete commended itself at once in this respect. In addition, Anchorage and this part of Alaska are subject to rather frequent earthquakes, hence tremor resistance had to be developed in the design. Another consideration was cost. Since nothing is produced locally, all manufactured materials have to be shipped in from the outside by steamer to Seward, thence by rail for the remaining distance. It was highly important, then, to make fullest use of available local material. The abundance of good sand and gravel near the site further recommended concrete.

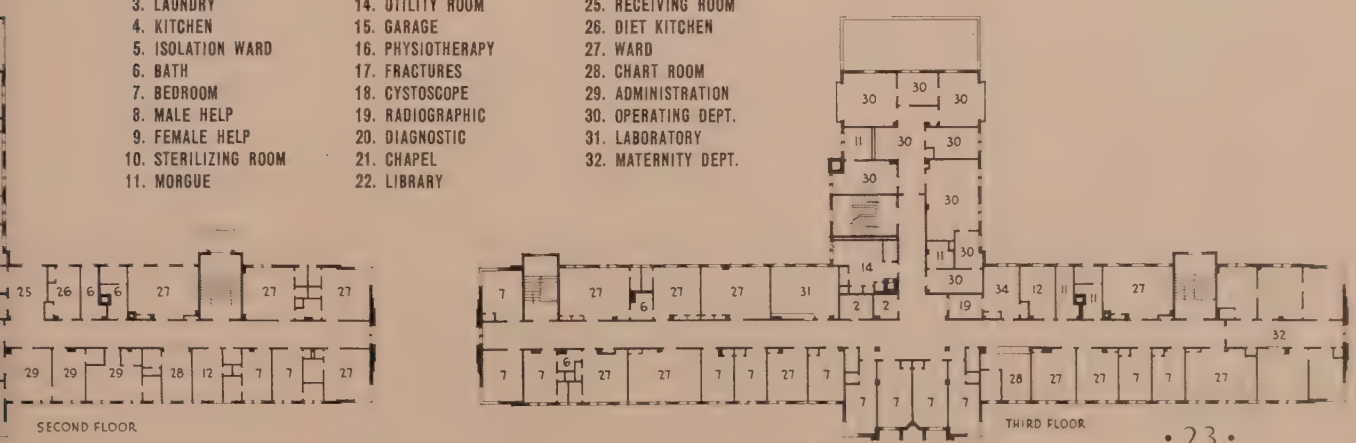
As illustrated, the hospital is T-shaped in plan, the main portion 260x42 ft. Back of the central pavilion a wing, 42 ft. wide, extends 70 ft. to the rear. There are three full stories and a central fourth story and penthouse.

Structural framing is simple: beams and columns flanking the corridors and a one-way slab, continuous for three spans extending from side to side of the building. Exterior walls are concrete, 8 and 9 in. thick, and stairwells, elevator and certain other interior walls are of concrete. An extremely rigid and well braced building resulted. Control joints were employed in the walls with satisfactory results. Exterior walls are sound-insulated with cork and acousti-tile.

The W. H. Witt Co. prepared the structural design and the MacDonald Construction Co. of St. Louis, Mo., was the contractor on this job as on many other architectural concrete buildings in various Alaska towns.

LEGEND FOR PLANS OF ANCHORAGE HOSPITAL

1. HEATING PLANT
2. STORAGE
3. LAUNDRY
4. KITCHEN
5. ISOLATION WARD
6. BATH
7. BEDROOM
8. MALE HELP
9. FEMALE HELP
10. STERILIZING ROOM
11. MORGUE
12. DINING ROOM
13. ELEVATOR
14. UTILITY ROOM
15. GARAGE
16. PHYSIOTHERAPY
17. FRACTURES
18. CYSTOSCOPE
19. RADIOGRAPHIC
20. DIAGNOSTIC
21. CHAPEL
22. LIBRARY
23. COMMUNITY ROOM
24. SISTERS QUARTERS
25. RECEIVING ROOM
26. DIET KITCHEN
27. WARD
28. CHART ROOM
29. ADMINISTRATION
30. OPERATING DEPT.
31. LABORATORY
32. MATERNITY DEPT.





With architectural concrete it was easy to meet the budget set up for the new city hall in Oxford, Miss. Architect J. T. Canizaro of Jackson, Miss., has introduced strong accent notes in the modern design in the form of polished black granite cast stone columns and inscription panel. The structure was built by Walter L. Perry Construction Co., Philadelphia, Miss.

City Hall for Oxford, Mississippi

By J. T. Canizaro*, A.I.A.

WHEN the board of aldermen of Oxford, historical old town of northern Mississippi, set up a program for a new city hall building in 1938, they had definite ideas and requirements. They wanted a masonry building; a structure large enough to include all city offices, fire department, courtroom and office space that might be used for other public purposes. The building had to be firesafe and it must be built at a cost figure that permitted no stretching the long way. By themselves each of these requirements was fine and laudable; but together they were impossible, because there was not enough money to do the job.

The problem, however, was dumped into my lap with the implied challenge that "nothing less will do". When I suggested architectural concrete as an alternative to masonry the aldermen were not enthusiastic, for they were sold on the familiar masonry of the town. They were, however, interested in assurances that nothing would be sacrificed in size, facilities or convenience and that the use of concrete would not strain the budget.

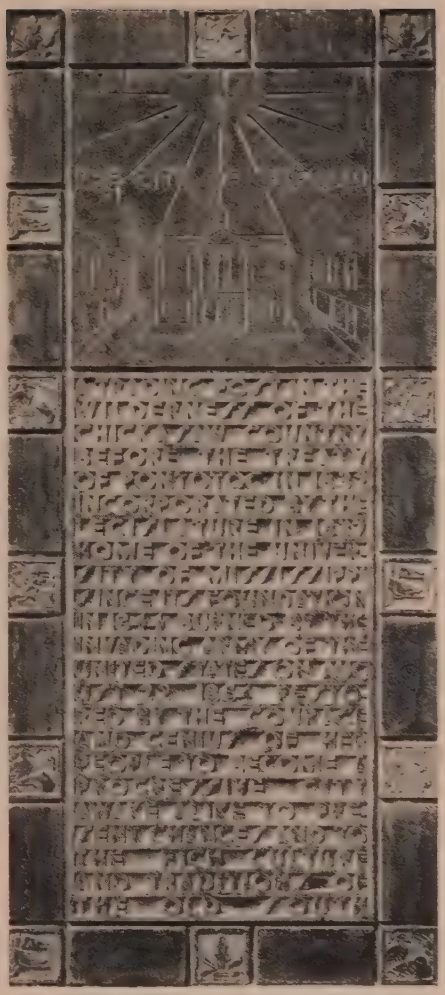
A presentation of alternate designs in concrete and masonry won permission to proceed in concrete. None has

*Of Jackson, Miss.

regretted the choice; in fact, all concerned are so pleased with the results it is doubtful if any remembers that masonry was an original "must".

The style of the architecture, if it must be defined, is modern and the massive black cast stone columns supporting the entrance canopy are strong accent notes in the design. The two cast stone columns made with black granite aggregates and ground to a high polish, are 10 ft. 8 in. high and 42 in. in diameter. Another use of the black cast stone, a panel relating the history of Oxford, is the only other strictly ornamental feature of the building unless one contends that the clock and the letters over the main building and fire department are more decorative than useful.

I believe that concrete should be used in white or light finishes and that surface textures should reveal the strength of the material. I also believe that when modern forms and their variations are executed in concrete the contrasts must be bold. These ideas were given full play in Oxford's city hall, which is a modern design executed in concrete.



Oxford's romantic history is written on the wall in black cast stone.

Walls and floors are reinforced concrete, finished on the exterior by portland cement paint and plastered inside. The ceilings were plastered direct and the floors were topped with asphalt tile. Space inside the building provides offices for the mayor, city clerk, engineer, marshal, a courtroom seating 80, and public rooms, the fire department, garage and boiler room, on the first floor. The second story contains 12 offices which are being used by WPA, and other public services. Annexed to the main structure is a garage for fire engines and city truck.

The building, erected during 1938 by Walter L. Perry Construction Co., Philadelphia, Miss., at a cost of approximately $27,000, looks even better after a year and a half of weathering than it did when first completed and is expected to mellow and change with time as concrete does so gracefully.



The white-painted, strong texture of the wall forms the background for a modern clock.



School for Superior, Nebraska

Main entrance of South Ward School, Superior, Nebr., a six-classroom, single-story structure of architectural concrete. Designed by Davis & Wilson, architects, Lincoln, it was built by Aasen & Lien, contractors of Fairbury, Nebr.

By Ellery Davis, Jr.*

ALTHOUGH reinforced concrete floor slabs, beams and columns have long been the preferred system for fire-safe construction in this section of the country, the use of concrete architecturally in walls has been but a recent and gradual development. This tardiness has been due to a feeling among most designers that the great extremes of temperature and humidity prevalent here were factors with which they were unwilling to experiment. Investigation and experience, however, have revealed that use of architectural concrete is entirely feasible and a great many new structures in concrete are going up in Nebraska as elsewhere.

One of these new structures is South Ward School at Superior, Nebr., a modern building which replaces an old brick school. The main portion of the building faces east and west and consists of six classrooms, office, teachers' and pupils' rest rooms, storage and book rooms. A kindergarten wing at the south end is served by a separate entrance and contains, aside from kindergarten room, a small stage and proscenium, wardrobe and toilet. A gate across the corridor

*Davis & Wilson, architects, Lincoln, Nebr.



Modern lines and well grouped, ample window areas of the new school contrast strikingly with the old building it replaces.

separates the kindergarten wing from the main building so that the former area may be used for assembly purposes after school hours without opening the entire building. The basement under the whole area contains a large playroom service room and storage space as well as the heating equipment.

One of the interesting elements in the very simple exterior design is the elliptical section of all window mullions. Use of this section was made possible by the depth of reveal resulting from the 2-in. furring strips, 7/8-in. insulation board and 3/4-in. plaster finish on the interior in addition to the 8-in. wall thickness. The watertightness and insulating value of the furred concrete wall we consider superior to the customary brick and hollow tile construction without furring.

Expansion joints 1 in. wide run continuously from footing to coping to separate the main section and kindergarten wing. The joints are made watertight with a copper bellows and calking on the outside and are filled with mineral wool insulation on the inside. Within the building the joints occur at reentrant angles where the plaster is terminated at metal screeds at the edges of the joints.

Control joints are employed at the center of each bay, and although there is no ornamentation in which to conceal them, careful tinting of the calking to match the wall finish makes these joints invisible.

Floor construction throughout is concrete beam and slab, finished in classrooms with plain sawed oak and with terrazzo in corridors and vestibule.

Special attention was given to wall forming to produce smooth, continuous surfaces. This care resulted in a wall that appears to have been cast in a single lift although in reality placement was done in several stages of varying heights. Exterior wall surfaces were finished in a very light, warm grey color, the wrought iron work, including the lettering, being dark green.

Total cost of the building, including heating and plumbing, electric wiring, hardware, lighting, lockers and all fees, was $40,700. Construction was started late in June of 1939 and the building was completed early in January, 1940. Large credit is due to the general contractors, Aasen & Lien of Fairbury, Nebr., for the care with which they carried out the work.



A new State Highway Department maintenance building, erected at Mt. Pleasant, Mich., comprises two units—a high ceilinged garage and equipment storage room and a lower office unit. Designed for concrete by Stewart-Kingscott Co., architects and engineers of Kalamazoo, it was built by Vinton Construction Co. of Coldwater at a cost of $41,000.

New Highway Garage in Michigan

By Louis C. Kingscott*

A NEW State Highway Department maintenance building erected at Mt. Pleasant, Mich., is comprised of two units—a garage approximately 61x142 ft. and 20 ft. 8 in. high, and an office and storage unit 18x146 ft. and 13 ft. high. The building is architectural concrete with roof supported on steel trusses spanning the entire width of the garage. Roof over the office building is concrete on precast concrete joists.

*Stewart-Kingscott Co., architects and engineers, Kalamazoo, Mich.

The garage, which has no floor obstructions, houses cars, trucks and other highway equipment. Large steel doors at opposite ends of the building afford entrance and exit for all equipment. Continuous steel sash about 4 ft. in height placed near the eaves on two sides of the garage, forms a clerestory effect affording an abundance of natural illumination.

In the office wing, space is provided for storage of materials and supplies, a shower room with lockers and baths



Large doors at both ends of the garage unit permit equipment to be moved in and out readily



Control joints are provided at intervals along the walls to allow for volume changes in the concrete.

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33 West Grand Avenue, Chicago

and a boiler room. At one end of this wing is the office, one side of which has a semicircular wall overlooking the entire maintenance yard.

The architecture of the exterior follows the contemporary style, achieving pleasing appearance chiefly through simple and appropriate use of the material of construction. The concrete was placed against plywood forms to produce a smooth finish. Aside from thorough cleaning there was no other exterior treatment.

The building was constructed with the aid of a PWA grant, and was built by the Vinton Construction Co., of Coldwater at a cost of approximately $41,000. Another State Highway Department maintenance building very similar to the one in Mt. Pleasant is nearing completion in Frankfort.



To the right of the entrance is a curved alcove containing the office. Its windows command a view of the entire maintenance yard.

Athletic Plant for Dallas High Schools

By Hoke Smith*, Architect

ONE of the largest athletic plants in the country devoted to high school sports has just been built in Dallas, Texas. Comprising a large stadium and a fieldhouse, both of architectural concrete, the layout provides play facilities for all high school competitive sports from football to boxing. The stadium, lacking completion of the horseshoe plan, consists of two grandstands 135x390 ft., seating 23,457 spectators. When the stadium is completed by enclosing the horseshoe at some future date, capacity will be raised to 40,000. The fieldhouse is 125x165 ft. and seats 3,000.

This modern sports center is the realization of a proposal made several years ago by P. C. Cobb, athletic director of Dallas high schools. It was achieved through the cooperation of the city of Dallas, the board of education and the Work Projects Administration, and as such has had the widest community interest and approval since the beginning. The land on which it is built, 32 acres located within a mile of the downtown district, was donated by the city. It was the site of the old water reservoir on Trinity River bottom land, and the first part of the work involved razing old structures, filling, grading and landscaping.

Approval for a federal grant was followed by action of the board of education in floating a bond issue to furnish the balance of funds needed. In its present form, the sports layout represents a total expenditure of $765,000.

The football field, a perfect sodded oval in the center of a cinder track designed to A.A.U. specifications, is flanked by the two concrete grandstands. The track is a regulation quarter mile loop with a 220-yd. straightaway stretching out along the west stand.

*Of Dallas, Texas.

This fieldhouse is one of the main features of the all-concrete athletic plant recently built for Dallas, Texas, high schools. Hoke Smith was architect for the entire layout and R. L. Reife was the structural engineer—both of Dallas. Construction was by WPA labor. Total expenditure for the project was $765,000.





Second major structure at the Dallas high school athletic center is a stadium seating almost 24,000. It includes the most up-to-date facilities for press and radio. An ornamental concrete fence encloses stadium and fieldhouse.

Since the land is old river bottom, the Trinity River course having been diverted several years ago to a new course confined in levees some 1¼ miles distant, it was necessary to carry the footings of the stadium structures down 20 ft. at which point the bases were made wide to spread the load. The stadium is free of steps and stairways. Easy ramps of concrete leading from broad vomitories are designed to permit exit of a capacity crowd in ten minutes. The ramps open onto concrete walks beneath the stands where there is ample space to shelter the entire crowd in case of sudden rainstorms. Atop the west stand is a spacious press room accommodating 100 reporters and observers. Directly above is a house for three broadcasting booths, the roof of which forms a platform for cameramen.

The floor of the fieldhouse provides space for a regulation basketball court which is also marked out for volley ball, tennis, wrestling and boxing. The building contains shower and dressing rooms, first-aid room and complete comfort facilities.

Completing the layout is a 12½-ft. ornamental concrete fence which surrounds the entire plot.

In design the entire plant is modern, the various units carrying similar motifs into a harmonious ensemble. For the most part, decorative detail is confined to simple geometric treatment at pilaster terminals, and to sculptured bands symbolizing games and sports.

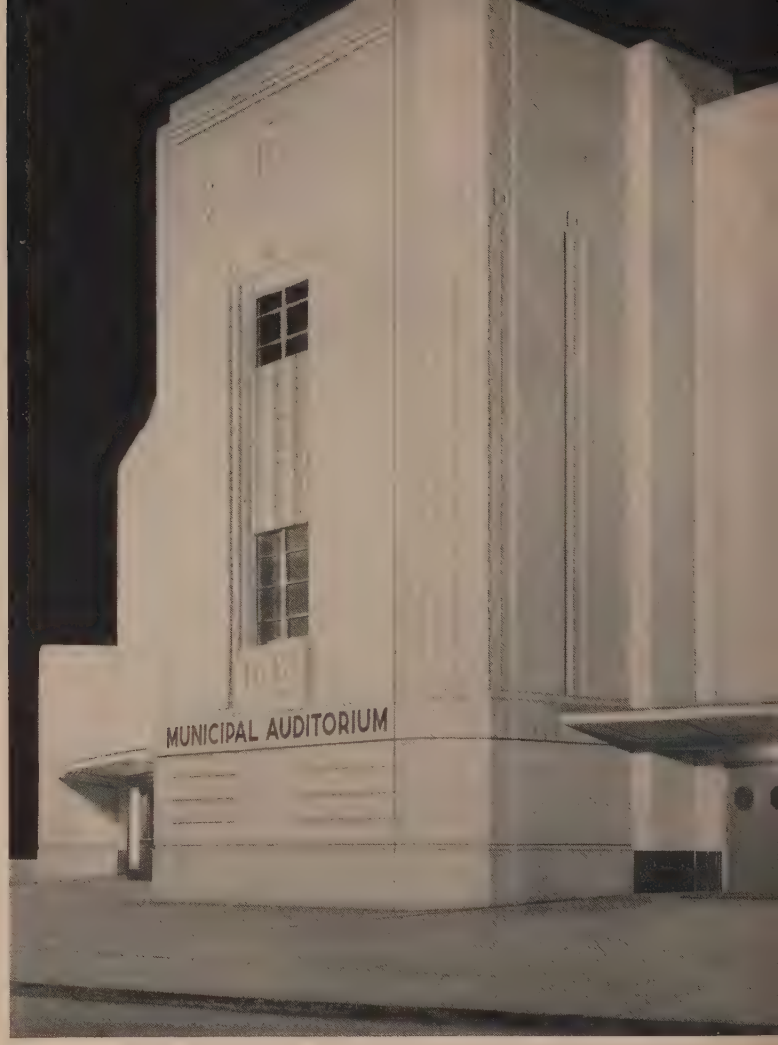
Although there was no provision for the hiring of skilled labor on the project and labor crews had to be trained for specific jobs, it is agreed that no excuses need be made for the construction. An exceptionally good execution of the plans in concrete was achieved, demonstrating that concrete, known to be a practical and economical building material in the hands of capable contractors, is equally satisfactory under proper supervision even when unskilled and untried labor is used. Great care was taken to design and arrange the formwork on the drafting board. Also specimen wall sections were made which were largely responsible for the ease with which each problem was met in the field with assurance and confidence in the result.

Because the supply of forming materials was limited to 550,000 board feet of lumber and plywood, each foot of this material was used an average of nine times for 755,000 contact feet of forms, scaffolds, hoisting towers, runways and cribbing pier holes for foundations. Many forms were reused as many as 20 times, some plywood serving even more uses. This is a questionable practice but was mandatory here since funds were not available for additional materials. It was necessary, therefore, to increase care and attention with each reuse of the material to get the best results out of it. Here again preliminary layout of forming prevented waste and damage to our precious materials.

Great credit must be given for the splendid execution of the work to A. L. Jones, superintendent of construction, and his staff of assistants, and to Thomas P. Brennan who represented the board of education as building inspector. Their construction experience and constant alertness on the job are responsible for the smooth operation of the construction organization and the close adherence to the plans and specifications. R. L. Rolfe of Dallas was the structural engineer on the project.

Municipal Auditorium—Charleston, W. Va.

By Col. C. P. Fortney*, Structural Engineer



Filling a long-felt need in Charleston, W. Va., is a new, large municipal auditorium, equipped to handle anything from a club meeting to grand opera. The main facades of this building are architectural concrete.

MUNICIPAL Auditorium, thrown open to the public of Charleston, W. Va., late last year has done two fine things for the city: it has provided a long-needed center for civic assembly; and its great bulk has beautifully covered over an eyesore, a city dump in an old creek bed near the center of town. Occupying the major portion of a city block, the building has bold, modern lines with main facades curved into one huge semicircular wall of architectural concrete.

An auditorium or a music building has been a subject of public agitation among culture-loving Charleston citizens for many years, but realization of this long-wanted building came only after intensive efforts of an auditorium committee headed by Councilman Harry Silverstein, and the city council under the leadership of Mayor D. Boone Dawson. The project, as finally approved by PWA and the citizens who passed a necessary bond issue, cost $502,000.

The auditorium includes, in addition to the main auditorium and balcony area, complete modern backstage and stage facilities; exhibit rooms under the foyer; four committee rooms for small meetings, and general toilet facilities. The stage can be used to hold an overflow crowd of 1,000 and may be transformed into bleacher space when the main floor is used for sporting events. Seating capacity is 3,500.

Main facade, as stated, is architectural concrete, the curved wall sections being relieved by projecting pylons or buttresses. Detail is simple with ornament used sparingly. Side and rear walls are of brick, backed-up by lightweight concrete masonry units. Some of the partitions are concrete masonry, others are gypsum and tile. The roof is carried on steel trusses. The concrete floor slab rests on earth subgrade except for the back portion of the building which has a small furnace room in the basement.

Since the building was erected over fill in an old creek bed, several problems were encountered in the structural design. The site has frequently been threatened with serious inundation during flood time, one recent record flood covering the site with several feet of water as it did much of the downtown area. The floor slab had to be heavy enough to resist some uplift, the maximum being a head of 38 ft. Foundations consist of concrete piles 27 ft. long through the fill, the top diameter of the piles being 18 in. Over the piles are reinforced concrete mats 27 in. thick and 6 ft. on each side. Foundation walls are 14 in. thick.

*Of Charleston, W. Va.

Plans called for construction of the three parts of the concrete front wall without vertical joints being apparent. Expansion joints, however, were concealed by locating them at the edge of buttresses in two places near the third points. Two thicknesses of ordinary premolded road joint filler was used with copper dams placed just back of the outside face of the walls. The joints were then filled flush to the surface and finished with the walls.

The walls were formed with plywood with milled white pine used for fluting and other ornamental work. Bent plywood was used successfully for the curved wall areas. No waste molds were used for any of the detail. The plywood forms were built in panels to allow 8 ft. 6-in. lifts and were used several times. When they became unfit for exterior wall surfaces they were used as inside forms.

Some ready-mixed concrete was used, but most of the concrete was mixed on the job. The concrete was designed for a strength of 3,000 lb. at 7 days. Inspectors at the batching plant controlled the moisture content with satisfactory results.

Concrete was placed from a tower, being carried from the dump buckets to the place of deposit in wheelbarrows. Concrete in the forms was spaded thoroughly and internally vibrated by a gas engine vibrator. The fine surfaces resulting from careful form building and placing were brought to a smooth finish texture by means of hand rubbing, after which two coats of portland cement paint were applied. The finish color is grey-yellow.

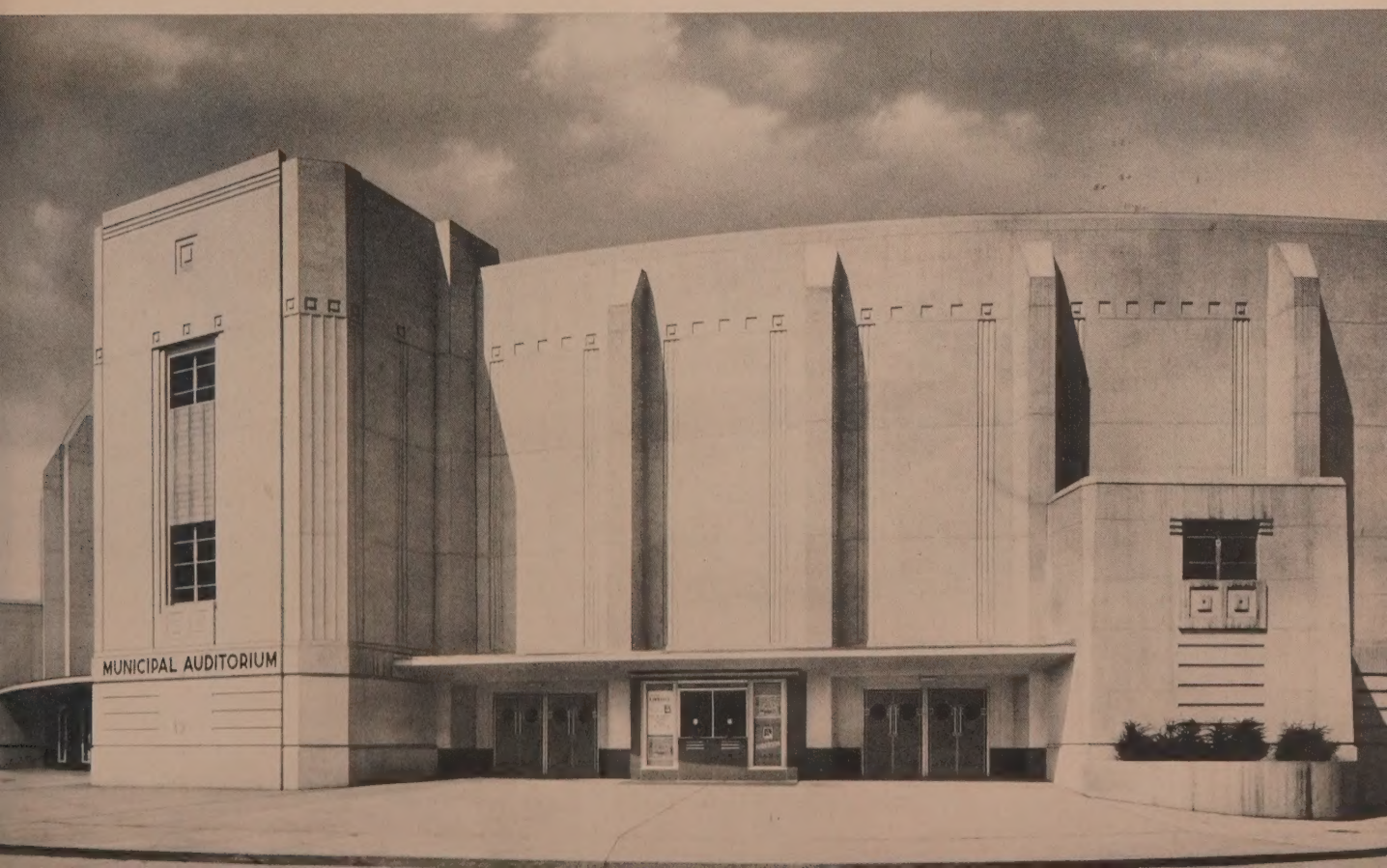
No acoustical treatment was used in the main part of the auditorium which has plastered ceilings and walls. Acoustical plaster was used for backwalls under the stage, for stage walls, ceiling under the balcony and on the balcony rail. Where concrete masonry partitions are exposed, they were sprayed with portland cement paint.

The concrete floor in the auditorium is exposed with a troweled finish with carpet used only in the aisles. Floors in committee rooms, exhibit rooms, foyers, ramps and toilets have terrazzo topping.

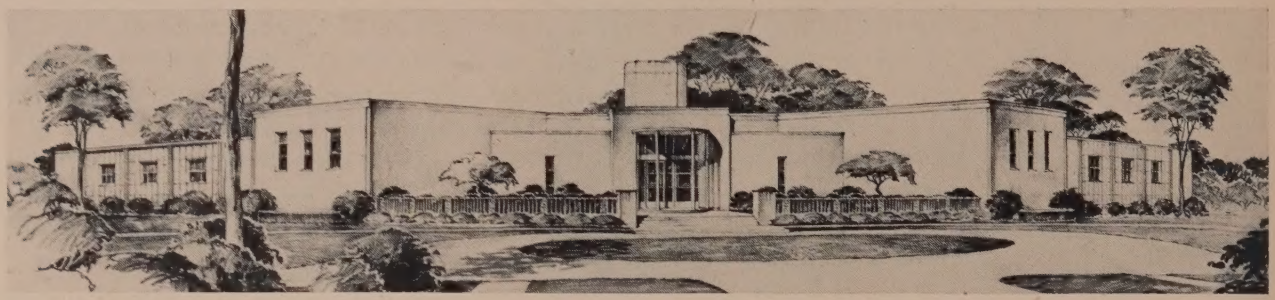
The building was designed by W. S. Wysong, local architect, and Rapp & Rapp, consulting architects in Chicago. P. J. Goodwin of the firm of Goodwin & Gravatt, Charleston engineers, assisted the writer as engineer on the job. Contractors were Ward & Ward of Charleston.

Since the building was opened last autumn it has housed a variety of cultural and entertainment attractions as well as other civic and private functions. The fine appearance and spaciousness of the building have attracted conventions and public gatherings that could not have been accommodated previously in Charleston. Evidence after the first few months of use is that Municipal Auditorium has met all expectations, that it is a building and an institution of which Charlestonians can be proud.

The big auditorium was designed by W. S. Wysong, architect of Charleston, and Rapp & Rapp, consulting architects in Chicago. Col. C. P. Fortney was structural engineer, assisted by P. J. Goodwin, of Goodwin & Gravatt, Charleston engineers. Ward & Ward, Charleston contractors, were the builders. Cost of the structure was about $502,000.



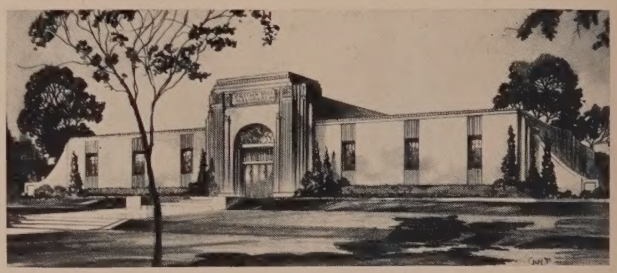
File 10-7-1 Some Designs for New Structures in ARCHITECTURAL CONCRETE



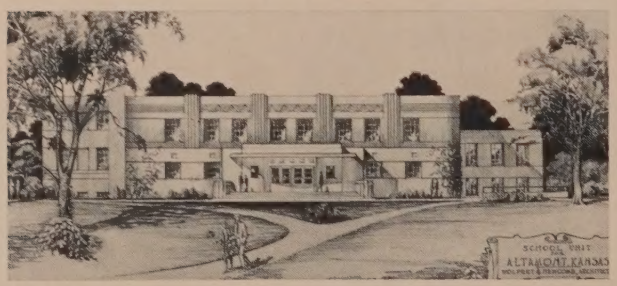
Work has been started on construction of a civic center building at Oglesby, Ill., which is being erected and will be operated by the Theodore G. Dickinson Foundation. It was designed for concrete by Anderson & Ticknor, architects of Lake Forest, Ill. Contract was awarded to Milton W. Pillinger of Oak Park, Ill.



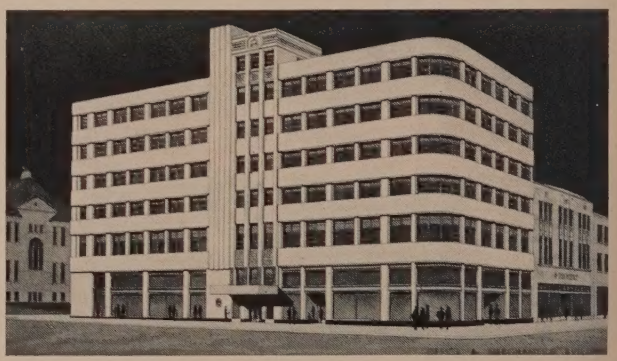
Plans are completed for Municipal Auditorium, David City, Nebr. N. Bruce Hazen, architect in Lincoln, designed this structure as well as a new architectural concrete grade school at Plattsmouth, Nebr., soon to be constructed.



Henger Construction Co. of Dallas, Texas, is building Crown Hill Mausoleum in that city. It was designed by B. Gaylord Noftsger, architect, Oklahoma City.



Wolpert & Newcomb of Chanute are architects for the first unit of Altamont, Kan., high school, being built by WPA.



Ready for construction is this office and mercantile building for Dr. Frank Hoeschler, La Crosse, Wis. J. Mandor Matson of Racine is the architect.



Awaiting work orders from WPA to start construction is this project for the Athens, Tenn., armory. A modern structure, it was designed for concrete by Barber & Shelton, architects of Knoxville, Tenn.

Entrance to Lions Gate Bridge, Vancouver





TWO great cast stone lions against backgrounds of massive concrete bases and pylons, guard the Stanley Park entrance to Lions Gate Bridge, a private toll structure across the narrow entrance to the spacious harbor of Vancouver, B. C. Bridge and pylons were designed by Montserrat & Pratley of Montreal, the concrete work being done by Stuart Cameron & Co., Ltd., of Vancouver. The lions were modeled by the late C. Marega, noted Vancouver sculptor. Heads and bodies of the lions were cast in separate inverted molds, both figures being cast in the same molds. Ordinary concrete was used for the interior mass of the lions but the exterior surface to a thickness of 1½ in. was made of concrete in which the coarse aggregate was a specially selected crushed blue gravel. Pylons and bases were bush hammered.


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